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(56) Documents Cited

GB 0516835 A

US 5617810 A

US 5203276 A

US 4768454 A

US 4366769 A

US 3724011 A

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(54) **Folding Boat**

(57) A folding boat comprises at least two 3 dimensional rigid hull sections 1,2,3 hinged to one another and dimensioned and shaped such that when folded they fit inside one another to form a compact unit. An inflatable collar 4 is attachable to upper outwardly extending edges of the hull sections and when not in use is stored in folded form within the hull sections.

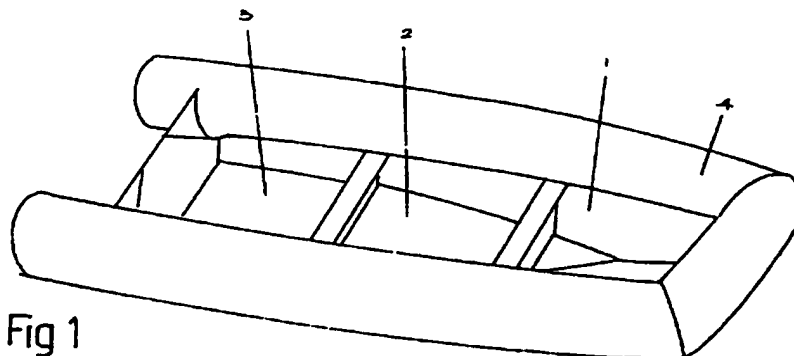


Fig 1

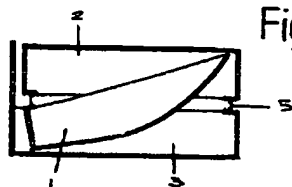


Fig 4

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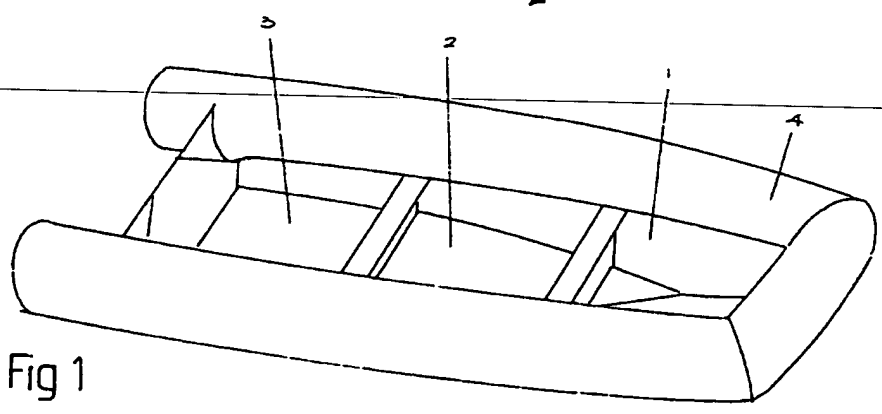


Fig 1

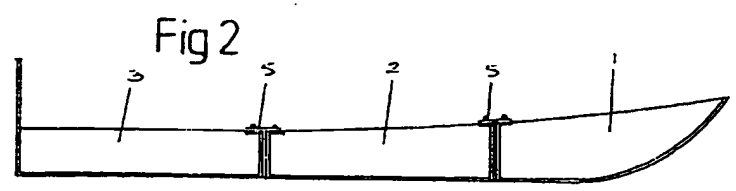


Fig 2

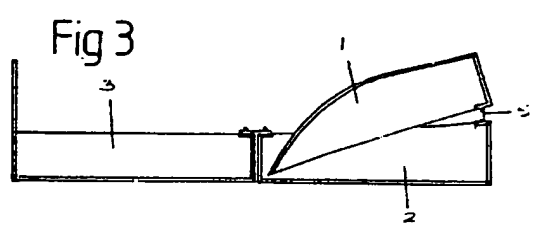


Fig 3

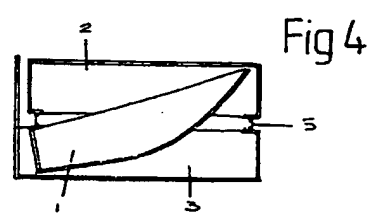


Fig 4

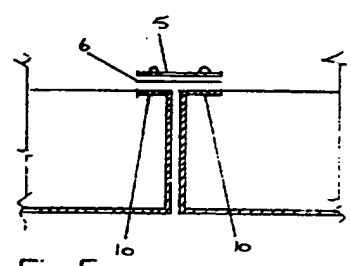


Fig 5

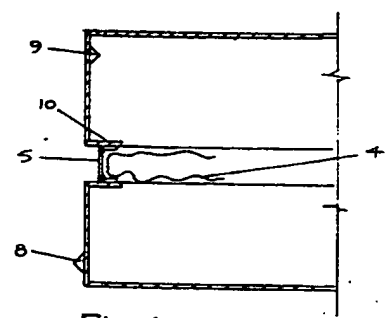
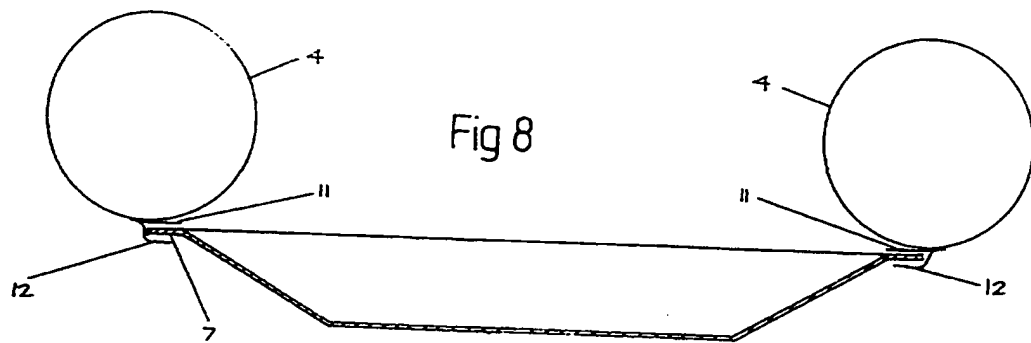
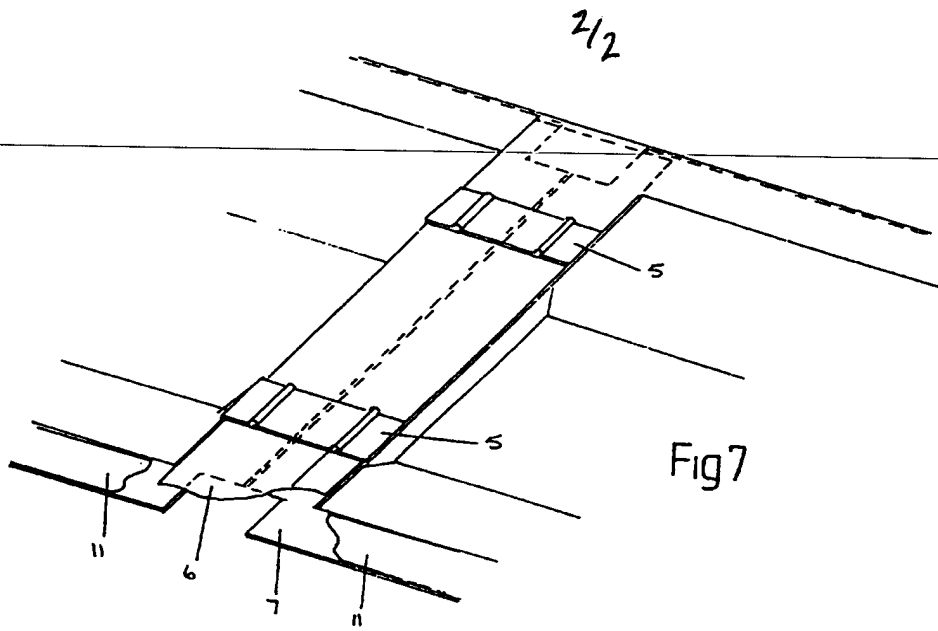


Fig 6



This invention relates to a method of producing a folding boat with rigid hull sections and an inflatable collar.

Various arrangements of folding boat are well known, being either made of flexible sheet material that is distorted to form a boat shape or inflatable boats that 'fold up' by removing the air and rolling up the fabric. They may have removable floorboards or a slatted floor that gives some rigidity in use but allows folding.

According to the present invention the hull of the boat is formed in two or more rigid sections that have permanent shape and form in 3 dimensions. These are shaped and hinged so that the sections fold inside one another. Furthermore the hulls have an inflatable collar attached to their edges, forming the upper section of the boat. The hingeing is arranged so that the fabric of the collar can be accommodated within the folded boat without 'pinching'. The boat is kept open by the pressure of air in the collar and / or by a catch mechanism that locks the sections. Furthermore, the inflatable collar is attached in such a manner that, combined with a flexible membrane, the boat is sealed from the ingress of water at the joints.

Figure 1 shows, in perspective, a typical embodiment of the boat with the collar inflated.

Figure 2 illustrates a longitudinal section through the boat.

Figure 3 shows the longitudinal section of the rigid parts with the first hull section folded into the middle section.

Figure 4 shows the longitudinal section of the rigid parts with the sections completely folded.

Figure 5 shows an enlarged detailed longitudinal cross section of the hinge point at a typical junction between two hull sections.

Figure 6 shows an enlarged detailed longitudinal cross section of a typical hinge point with the hull sections folded.

Figure 7 shows, in perspective, a typical junction of hull sections illustrating an example of the design required to provide a watertight joint and allow folding.

Figure 8 shows a transverse section of the edge of a typical hull section and the collar with its attachment strips.

Referring to the drawings, the boat consists of hull sections 1,2 and 3. Hinges 5 and a membrane 6. The hull sections have edges, 7 to which the collar may be attached.

The hull sections of the boat are preferably designed to be shaped in accordance with good naval architectural practice but in addition, the dimensions of the hull sections are designed such that, when folded, they fit inside one another to form a compact package.

In order to fold the boat, the collar 4 is deflated and the fabric folded into the hull sections 1,2 and 3. The forward section 1 is folded into the second section 2 and then sections 1 and 2 are folded over together into section 3.

In order to avoid pinching the fabric (which would occur with a simple hinge) the hinges 5 are of the double knuckle type, a known configuration of hinge that has 2 pivot points. This allows the fabric space to bend round with the hull sections. The hinges 5 are preferably of rigid construction but may be made of flexible sheet material. The hinges may be continuous 'piano' type or be separately spaced units.

In order that the joints are waterproof, a membrane 6 is positioned below the hinges 5 and glued or fixed to the flanges 10 of the hull sections in line with the pivot points of the hinges. The membrane is sealed to the collar fixing strips 11 and 12 in line with the pivot points of the hinges. The hull section edges 7 must be cut back such that the end of the edge of each hull section aligns with the plane of the pivot points of the hinges.

When the boat is unfolded, the sections 1,2 and 3 are opened until they lie against one another and are aligned by male and female alignment lugs 8 and 9. The collar is inflated to complete the boat and hold the hull sections open. A catch mechanism may be incorporated at each joint to hold the sections together.

Claims

1. A folding boat consisting of 2 or more rigid, 3 dimensionally formed and shaped sections dimensioned and shaped such that, when hinged together, they form a compact unit.
2. A folding boat that uses a hinge mechanism that allows the attachment of an inflatable collar, and is capable of accommodating the collar within the hull sections when folded.
3. A folding boat as in Claims 1 and 2 that uses a double knuckle hinge to achieve folding and accommodate the fabric collar without pinching.
4. A folding boat as in Claims 1, 2 and 3 that uses a flexible membrane to seal the joints between the hull sections, and between the hull sections and the inflatable collar.
5. A folding boat as in Claims 1, 2 and 3 that has edge pieces to the hull sections for the attachment of an inflatable collar, configured in such a manner that the geometry allows the folding of the boat without constraint by the collar or its attachment strips.



Applicati n No: GB 9620055.5
Claims searched: 1-5

Examiner: Alan Habbijam
Date of search: 16 December 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B7A (ADN, AADS)

Int Cl (Ed.6): B63B 7/00, 7/02, 7/04, 7/06, 7/08

Other: Online:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage			Relevant to claims
X	GB 516835	(MAY)	See eg Figs 1&2.	1.
X	US 5617810	(SAUERWEIN)	See eg Figs 5&6.	1.
X	US 5203276	(METHVEN)	See in particular Figs 1&2.	1.
X	US 4768454	(SELKEN)	See eg Figs 1&2.	1.
X	US 4366769	(LINGEMAN)	See eg Figs 5-7.	1.
X	US 3724011	(SCHOLLE)	See eg Figs 1&2.	1.

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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